You're Invited To Parkway Manor's 26th Annual

(But All New!)

Science Fair!!

Thursday, March 28, 2019
5:30 – 7:00 p.m.

Application Due Date:

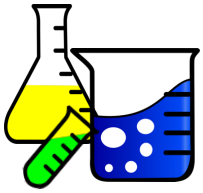
Monday, February 4th
(Application attached)

Fun For All!

- Optional opportunity to present your project to "Scientific Evaluators" (NOT scary judges)!
- Mr. Bartman Handing out awards!
- Scientific Scavenger Hunt for all attendees - with prizes!
- Easy to follow Science Fair packet that will walk you through the steps needed to complete your project!
- K – 5th grade projects displayed in Gym!
- Food and drinks sold!

Come and join us for a night of science and inquiry!!

The Parkway Manor Science Fair is a fun and exciting way for you to choose and explore a topic that interests **YOU**, do a really fun experiment or study at home and show off your amazing findings (*no teachers telling you what you have to study for a change!!*)!!



Science Fair Information

Participation is optional and open to all students in all grades. The goal of the Science Fair is to spark curiosity and promote interest in science and experimentation. We want you to have fun in a non-pressured environment where you don't actually have to worry about your grade. -- So don't stress, just give it a shot! Remember, you're in elementary school, this won't affect your college applications!!

How To Sign Up: Fill out and return the entry form on the following page by February 4th, 2019.

Easy-To-Follow Science Fair Packet: A packet is available for all students who wish to participate in this year's science fair. Please look for a printable version of the full packet in the school's e-communications email blast or ask your teacher for a hardcopy.

> This packet will be very helpful in walking you through step-by-step instructions on how to complete a science fair project on your own. Simply follow the packet, filling in the information as you go, and you will find that much of your presentation board will be completed in no time!

There Will Be Special Awards, But Everyone Will Leave A Winner!

On the day of the Science Fair a team of "Scientific Evaluators" (NOT scary judges) will preview the student's presentation boards in the Gym before the Science Fair begins. Extra special prizes will be awarded in each grade, but every student will leave a winner and receive an award for their participation. In addition, during the Science Fair you will have the opportunity to present your project to one of our special "Scientific Evaluators" if you choose to do so (No pressure! - You do not have to present if you don't want to and you will still be eligible to receive an award).

Space Allotment: Each student will have three feet of display space on a table available for their presentation board.

Science Fair Schedule for March 28th, 2019

8:15 – 8:45 a.m. Students may bring in their presentation boards and materials to the Gym first thing in the morning. Parents are welcome to come in with their students through the Gym entrance during this time if they need help.

1:00 – 3:30 p.m. Scientific Evaluators (not scary judges!) previewing student presentation boards

5:15 p.m. Doors open to Science Fair

5:30 p.m. **Science Fair Begins!!**

5:30 – 6:00 p.m. Participants must be standing by their boards during this time and must remain there for the first half hour.

- Participants can present their projects to "Scientific Evaluators" and guests!
- Scientific Scavenger Hunt for ALL students, siblings and guests (not just participants)!
- Food and drinks sold!

6:00 – 6:30 p.m. Participants may visit peer's projects and participate in the Scientific Scavenger Hunt!

6:30 p.m. Mr. Bartman presenting awards!

Science Fair Information (Cont'd)

Safety Note: Please remember, no open flames or live animals at the Science Fair and ask your parent or guardian for permission before beginning your science project or before performing any experiments at home.

After the Fair: Please take home your project or deliver to your classroom for display.

Questions?: Email Sara-Jane Bub (sjbub@yahoo.com) or Lauren Rabin (laurenrabin@hotmail.com)

Parkway Manor Science Fair Application

Name of Student: _____

Teacher: _____ **Grade:** _____

Will you be working in a group? Yes: _____ No: _____
(If Yes, each student must submit an application form.)

Please provide the names of your group members, their grades and their teachers:

_____ _____ _____
_____ _____ _____
_____ _____ _____

Name of Parent/Gaurdian: _____

Parent email address: _____ **Phone number:** _____
(An email address is required for communication. Please print email as neatly as possible.)

I authorize my child to participate in the Parkway Manor Science Fair. I understand and agree to the guidelines.

_____ _____
Parent/Guardian Signature **Date**

Please let us know if you would be willing to volunteer on the day of the science fair. In particular we are still in need of scientifically minded individuals who would be willing to be part of our "Evaluation" committee. Please indicate if you are willing to volunteer!! Thank you!!!

Willing to volunteer: (please circle)	Scientific Evaluator 1:00-2:30 p.m.	During Event 5:30-7:00 p.m.	For Clean Up 7:00-8:00 p.m

Parkway Manor Elementary Science Fair Planning Guide

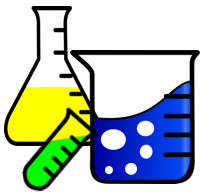


Table of Contents

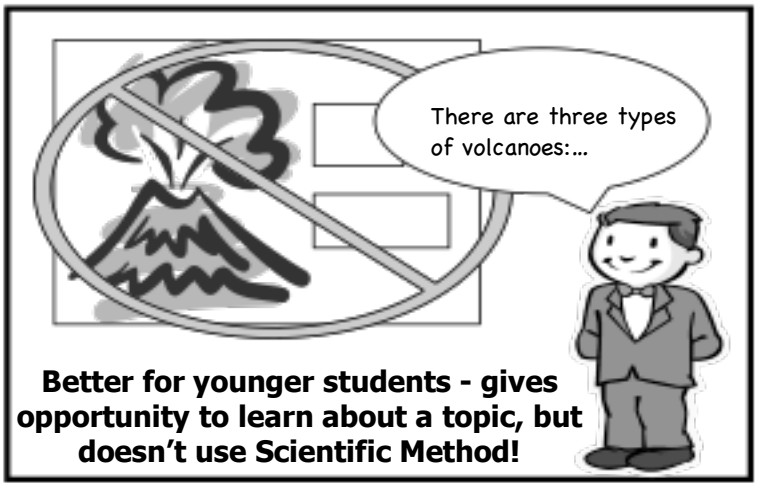
- a.k.a. -

(What is inside this packet in case you are impatient and want to jump around)

Types of Science Projects:

There are basically two types of science projects: **Experiments** and **Models**.

Doesn't use Scientific Method
Less recommended…



Better for younger students - gives opportunity to learn about a topic, but doesn't use Scientific Method!

A Model, Display or Collection:

Shows how something works in the real world, but doesn't really test anything.

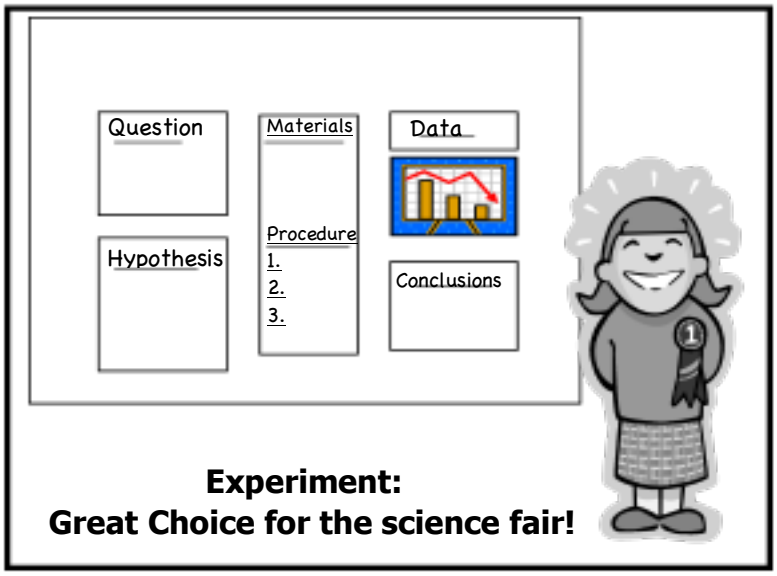
Examples of these include: "The Solar System", "Types of Dinosaurs", "How an Electric Motor Works", etc.

Cool!! Interesting!!
Recommended…

An Experiment:

Tests hypotheses and gives you the opportunity to explore the scientific method in an area you are interested in. In an experiment you are asking a question, conducting tests and changing variables.

Examples of experiments include: "The Effects of Detergent on Plants", "What Structure Can Withstand the Most Amount of Weight", etc.

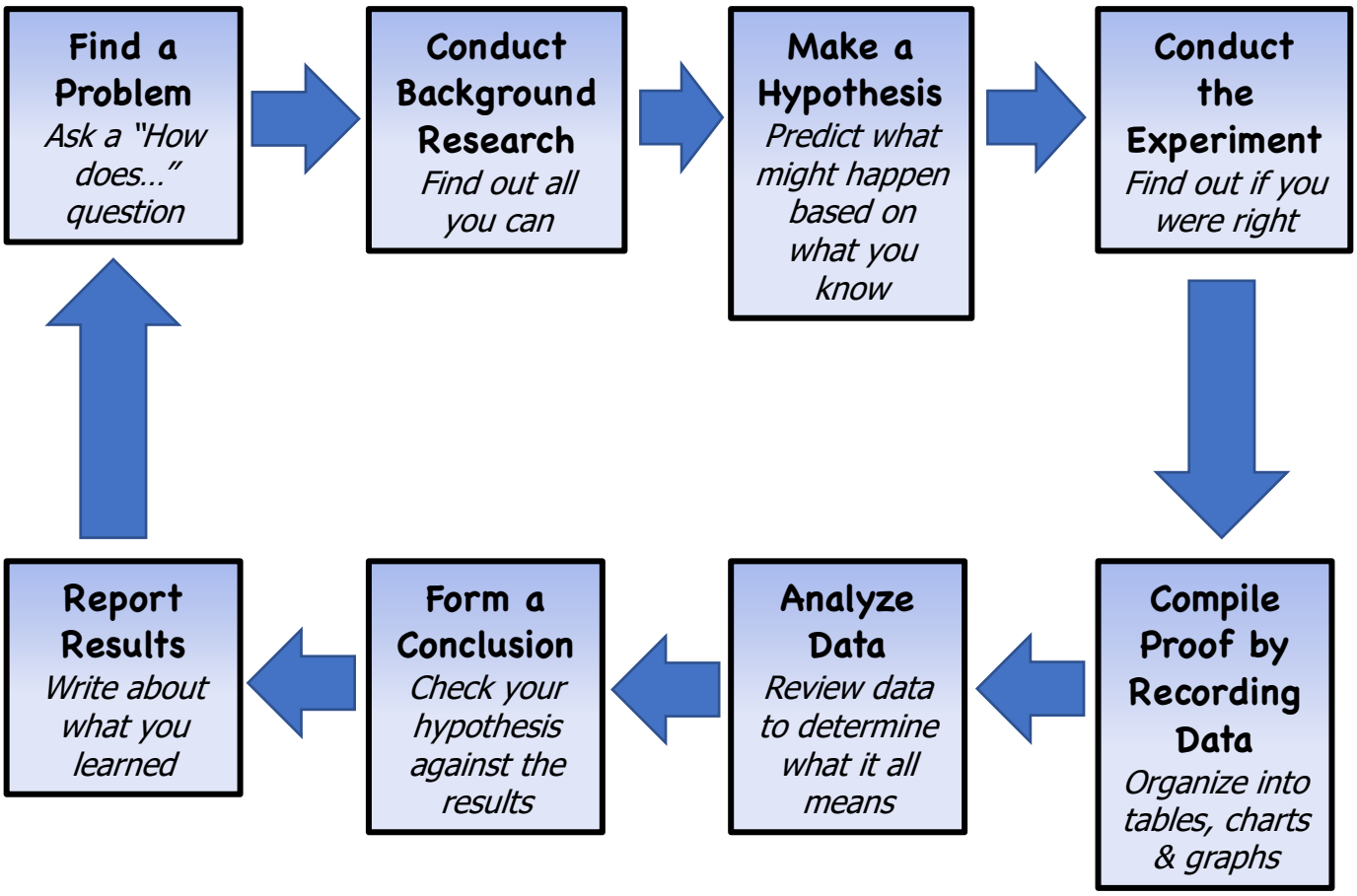


Experiment:
Great Choice for the science fair!

So What Type of Project Should You Do?

Even though you can learn a lot from building a model or display, we recommend that you do an **Experiment!!!** Why? Well, they are fun, they are more interesting and most of all, they take you through the **SCIENTIFIC METHOD,** which is the way real scientists investigate in real science labs.

So What In The World Is The Scientific Method?



Use the Step-by-Step Guide On The Following Pages To Help Complete Your Science Fair Project

On the following pages you will find a step-by-step guide to the Scientific Method and how to create an amazing science fair project. Simply follow the packet, filling in the information needed as you go, in order to help you design your project. As you complete the information in the packet you will find that much of your material for your presentation will be complete.

The Scientific Method: Step-by-Step

Step 1: Choosing a category that interests you…

All Great Projects start with great questions but before you get started on a great question you need to pick a subject or topic that you like. There are three different categories of the Science Fair to choose from. They are:

Life Science: This category deals with all animal, plant and human body questions that you might have and want to do an experiment about.

Life science also includes studying behaviors, so its a perfect category to try taste tests, opinion surveys, animal behavior training (or even training behavior in humans...like baby brothers or sisters...). *Remember, if you are dealing with animals for your project you must ask permission first from a parent or guardian and it is against Science Fair Rules to intentionally hurt an animal during an experiment.*

Physical Science: If you like trying to figure out how things work, then this is the category for you! It includes topics about matter and structure, as well as electricity, magnetism, sound, light or anything else that you might question, "How does it work and what if I do this to it, will it still work?"

Physical Science also includes the composition of matter and how it reacts to each other. These are the science experiments that may have bubbling and oozing going on, like figuring out what is an acid and what is a base. It is a perfect category to try to mix things together to see what will happen. *Remember, you must always ask a parent or guardian for permission and help if you are experimenting with possibly dangerous things.*

Earth and Space Science: This category is really awesome because it covers all sorts of topics that deal with the Earth or objects in space. This includes studying weather, Geology (which is the study of everything that makes up the Earth, like rocks, fossils, volcanoes, etc..), and the study of all that is in space, including the stars, our sun and our planets. Unfortunately this topic is also where most kids mess up and do a collection or model project instead of an "Experiment," so be careful!!!

Now It's Your Turn:

Write down your favorite Science Fair Category and what it is you want to learn more about:

My favorite Category was _____
(Life Science, Physical Science, Earth and Space Science)

I want to do an experiment involving:

_____

_____

_____

_____

Step 2: Coming Up With A Good Question

Now that you have picked out a topic that you like and that you are interested in, it's time to write a question or identify a problem within that topic. To give you an idea of what we mean you can start off by filling in the question blanks with the following list of words:

The Effect Question:

What is the effect of _____ on _____?

sunlight	the growth of plants
eye color	pupil dilation
types of soda	a piece of meat
temperature	the size of a balloon
oil	a ramp

The How Does Affect Question:

How does the _____ affect _____?

color of light	the growth of plants
color of a material	its absorption of heat
humidity	the growth of fungi

The Which/What And Verb Question:

Which/What _____ (verb) _____?

material	is	the best insulator
foods	do	meal worms prefer
detergent	makes	the most bubbles
type of fruit	is	the best conductor of electricity

Now It's Your Turn:

Create your Science Fair question using either the "Effect Question", the "How does Affect Question" or the "Which/What and Verb Question":

_____

_____

_____

_____

_____

_____

_____

Step 3: Doing The Background Research And Forming The Hypothesis:

So you've chosen a topic and come up with a good question. Now it's time to conduct background research and become an expert on your category.

Conduct Background Research

So, how do you become an expert?

YOU READ!!!! READ about your topic. READ books and encyclopedias from the library. READ magazine articles. READ articles from the internet. Make a list of all the books and articles you read. You'll need that list for later.

YOU DISCUSS!! Talk about it with your parents. Talk about it with your teachers. Talk about it with experts like Veterinarians, Doctors, Weathermen or others who work with the things you are studying.

Whew!!!!...*Then when you think that you can't possibly learn anymore and the information just keeps repeating itself.. You are ready to...*

Write A Hypothesis

Now it is the time to PREDICT what you think will happen if you test your problem. This type of "SMART GUESS" or PREDICTION is what scientists call A HYPOTHESIS. To write your hypothesis just answer this very simple question:

What do you think will happen
(even before you start your experiment)?

Example Problem:	*Which type of fruit makes the best battery?*
Example Hypothesis:	*I think lemons will make the best battery because my research shows that lemons contain the most citric acid and therefore will produce more electrons than other fruits, in turn creating more energy.*

Now It's Your Turn:

Write down the problem and create a Hypothesis based on what you have researched.

Problem:_____

_____

Research:

Books I found in the library on my topic are:

Title: Author:

_____

_____

_____

Internet sites that I found on my topic are:

_____
_____
_____

People I talked to about my topic are:

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Some important points that I learned about my topic are

_____
_____
_____

Hypothesis: I think that _____

(will happen) because (my research shows...)_____
_____
_____

Step 4: Testing Your Hypothesis By Doing An Experiment:

Now we've come to the good part. The part that all scientists can't wait to get their hands on... you guessed it... The **EXPERIMENT**!

Don't forget, **take plenty of pictures** as you go through these six very simple steps so that you can use them on your presentation board to illustrate your experiment.

1. **Gather up your materials:** What will you need to perform your experiment? Keep track and make a list that you will use later when you create your board.

2. **Write a procedure**: Make a list of steps for performing your experiment. You can amend your list if you make changes or additions to your procedure as you go.

3. **Identify your variables:** The variables are any factors that can change in an experiment. Remember **test only one variable at a time** in order to get accurate results. In other words, if you want to test the affect that water has on plant growth, then all the plants you test should be in the same conditions, these are called **controlled variables:** same type of dirt, same type of plant, same type of location, same amount of sunlight, etc. The only variable you would change from plant to plant would be the amount of water it received. This is called the **independent or manipulated variable.** The independent variable is the factor you are testing. The results of the test that you do are called the **dependent or responding variables.** The responding variable is what happens as a result of your test. Knowing what your variables are is very important because if you don't know them you won't be able to collect your data or read your results.

4. **Test, Test, Test:** Remember that your results should be consistent in order to be a good experiment. In other words, when you cook from a recipe you expect the outcomes to be the same if you followed the directions (or procedure) step by step. Do the experiment more than once in order to test it properly. More is better!

5. **Collect your data:** Write down the results of the experiment every time you test it. Be sure to organize it in a way that it is easy to read the results. Use tables, graphs and other organizers to show the results.

Time Out!! How Do You Collect Data?!!?

A. **Keep a science journal:** This is like a diary used to record observations, collect research, draw and diagram pictures, jot down any additional questions you might have for later, etc.

B. **Have the right tools to do the job:** Make sure you have the right tools to take accurate measurements like rulers, meter tapes, thermometers, graduated cylinders or measuring cups that measure volume. The recommended standard of measurement in science is metric (i.e., meters, liters, Celsius, grams, etc.).

C. **Make tables, charts and diagrams:** These are generally the way a good scientist like yourself would keep track of your experiment trials. Don't be afraid to draw your tables, charts and diagrams by hand *(I mean you're just a kid, right?… It's ok if you don't know how to make charts on the computer!)* Try using one or more of the following to show your results:

- Tables
- Bar Charts
- Line Charts
- Pie Charts
- Diagrams

And Finally…

6. **Analyze your data and write a Conclusion:** Tell us what happened. Was your hypothesis right or wrong or neither? Were you successful, did it turn out okay? Would you change anything about the experiment or are you curious about something else now that you've completed your experiment. And most of all, **explain what you learned by doing this experiment.**

Now It's Your Turn:

Materials: *(Don't forget, take pictures!)*

List the Materials that you will need for your science experiment here:

1. _____ 6. _____
2. _____ 7. _____
3. _____ 8. _____
4. _____ 9. _____
5. _____ 10. _____

Variables:

List the variables that you will control, the variable that you will change and the variables that will be the results of your experiment:

My controlled variables are (the stuff that will always stay the same)**:** _____
_____
_____

My independent variable is (this is the thing that changes from one experiment to the next, it is what you are testing)**:** _____

My responding variables might be (in other words, the results of the experiment)**:**_____
_____

Procedure: *(Don't forget to take pictures!)*

List the steps that you have to do in order to perform the experiment here:

1st:_____

2nd:_____
3rd:_____
4th:_____
5th:_____
Etc:_____

Now Conduct your experiment!!! Test, test, test!!

(And, did we mention?... Don't forget to take pictures of your actual experiment to use on your presentation board!!!)

Collect your data and make tables, charts and/or graphs:

Use your own graph paper or your science journal to map out your tables, charts and graphs.

Conclusions:

Now tell us what you learned from this and if you were able to prove your hypothesis. Did it work? Why did it work or why didn't it work? What did the results tell you? Sometimes not being able to prove a hypothesis is important because you still proved something. What did you prove?

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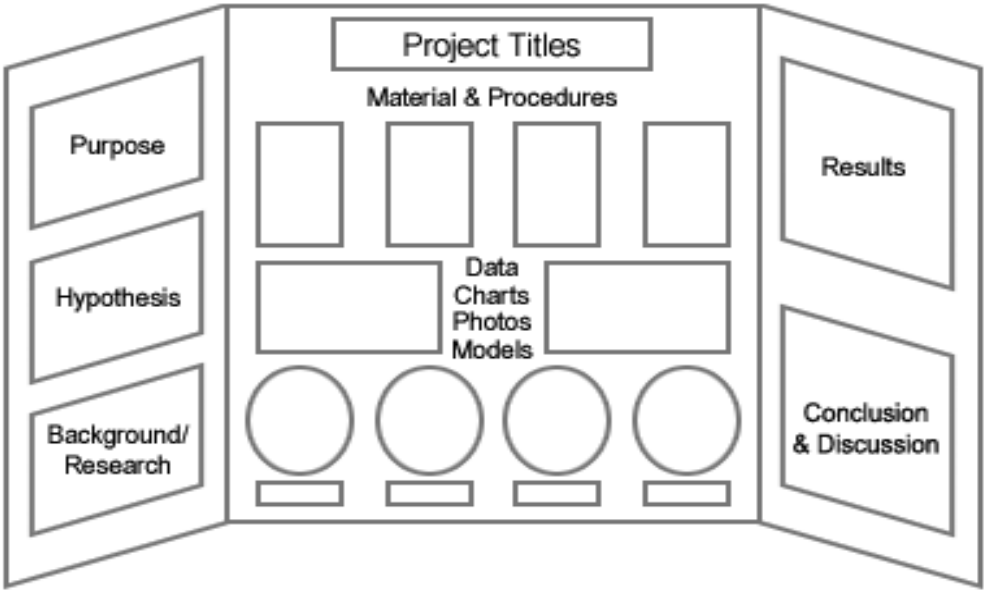
Step 5: Create Your Presentation Board

This is your chance to showcase all the hard work you've done to the "Scientific Evaluators" and school community that come out to see your presentation. Use your presentation board to illustrate step-by-step what your Science Fair project was about, how you conducted your research and what conclusions/learning you've reached. You can create your board however you like. Below is an example of a typical Science Fair Display Board, but this is just an example! Feel free to use a computer to type up your work, hand-write your work or use stencils and stick-on letters. Just make sure your board is as neat as possible.



What Do The "Scientific Evaluators" Look For In A Really Great Science Project?

Evaluation Criteria: The following criteria are what a typical Science Fair project is evaluated on. It's great to keep this in mind as you are developing your project. **But, don't worry!** -- This Science Fair project will not be included on your report card grades. – **This project is just for fun!** The criteria below are evaluated on an age appropriate level for each grade.

Components	How you can get full credit
Part I: Scientific Method	
Clear & Specific Question	- Includes your problems in the form of a question. - Science fair question should be grade appropriate
Clear & Specific Hypothesis	- Includes your hypothesis: I think…. Because
Complete Materials List	- Lists all materials necessary to perform the procedure. - Includes how many of each material you will need. - Makes the materials into bulleted list.
Complete & Thorough Procedure	- Lists all necessary steps in numerical order. - Lists all necessary steps with good detail.
Complete & Thorough Data	- Includes data: It may be, but not limited to: pictures, graphs, tables or charts correctly labeled.
Conclusions Supported by Data	- Explains whether or not your hypothesis is supported with evidence from the data and results.
Conclusions Relevant to Data	- Accurately uses data to support conclusions.
Part II: Originality and Presentation	
Creativity & Originality	- Makes sure content on board is original and creative. - Includes pictures. - Includes hands-on materials to display in front of the board.
Organization & Format	- Makes sure each component is appropriately labeled. - Proofreads for errors in grammar, spelling and punctuation. - Makes sure the display board is neat and attractive.
Subtotals:	